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Figure 1

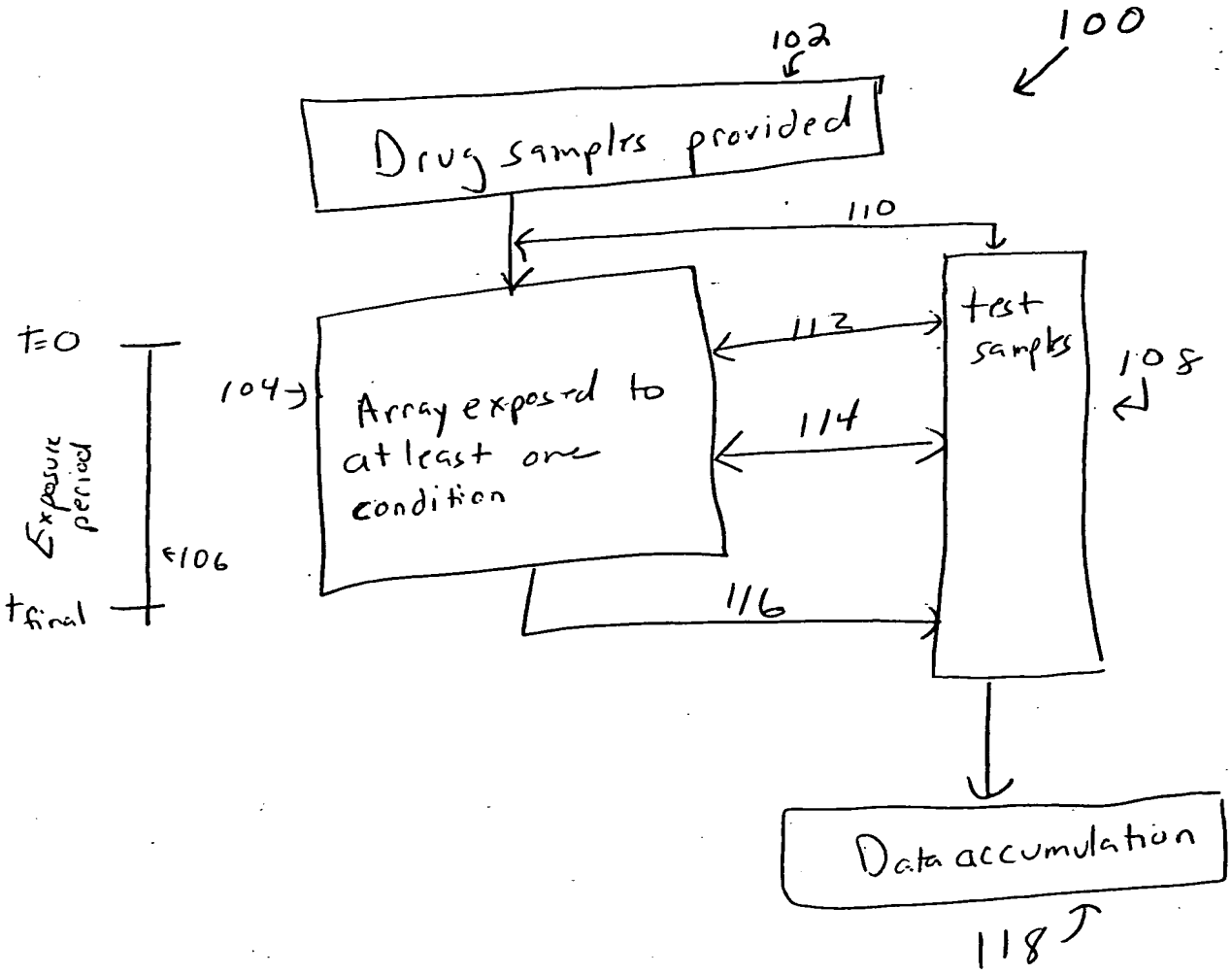

100
102
Drug samples provided
110
T=0
104
Array exposed to at least one condition
112
114
test samples
108
Exposure period
t106
tfinal
116
Data accumulation
118

Figure 2

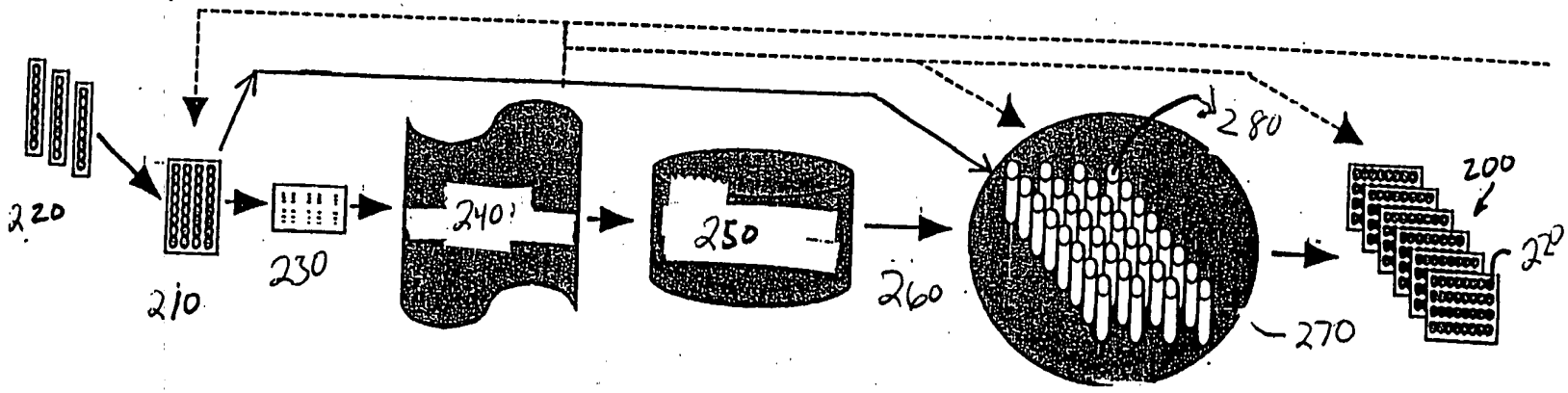
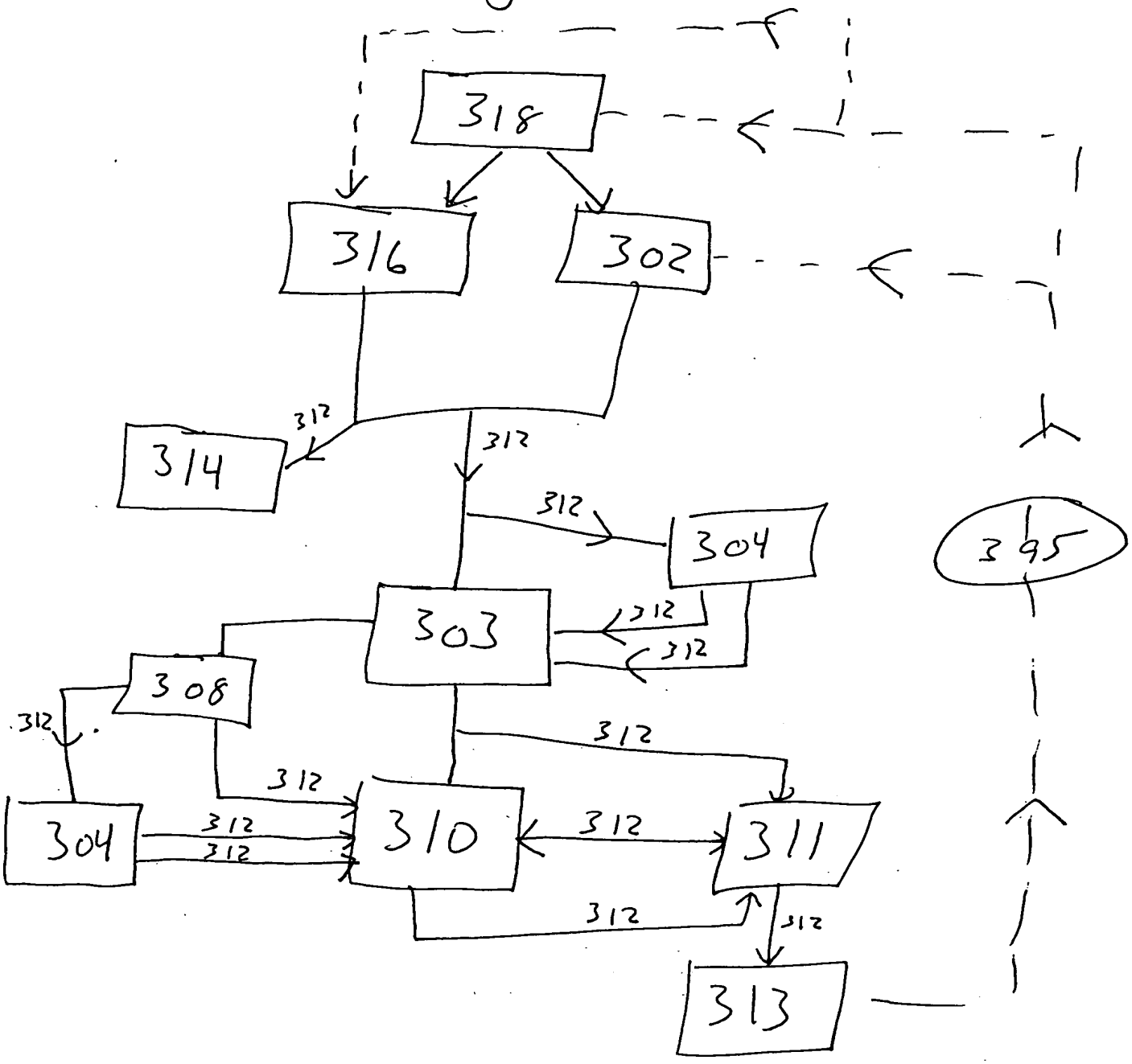


Figure 3



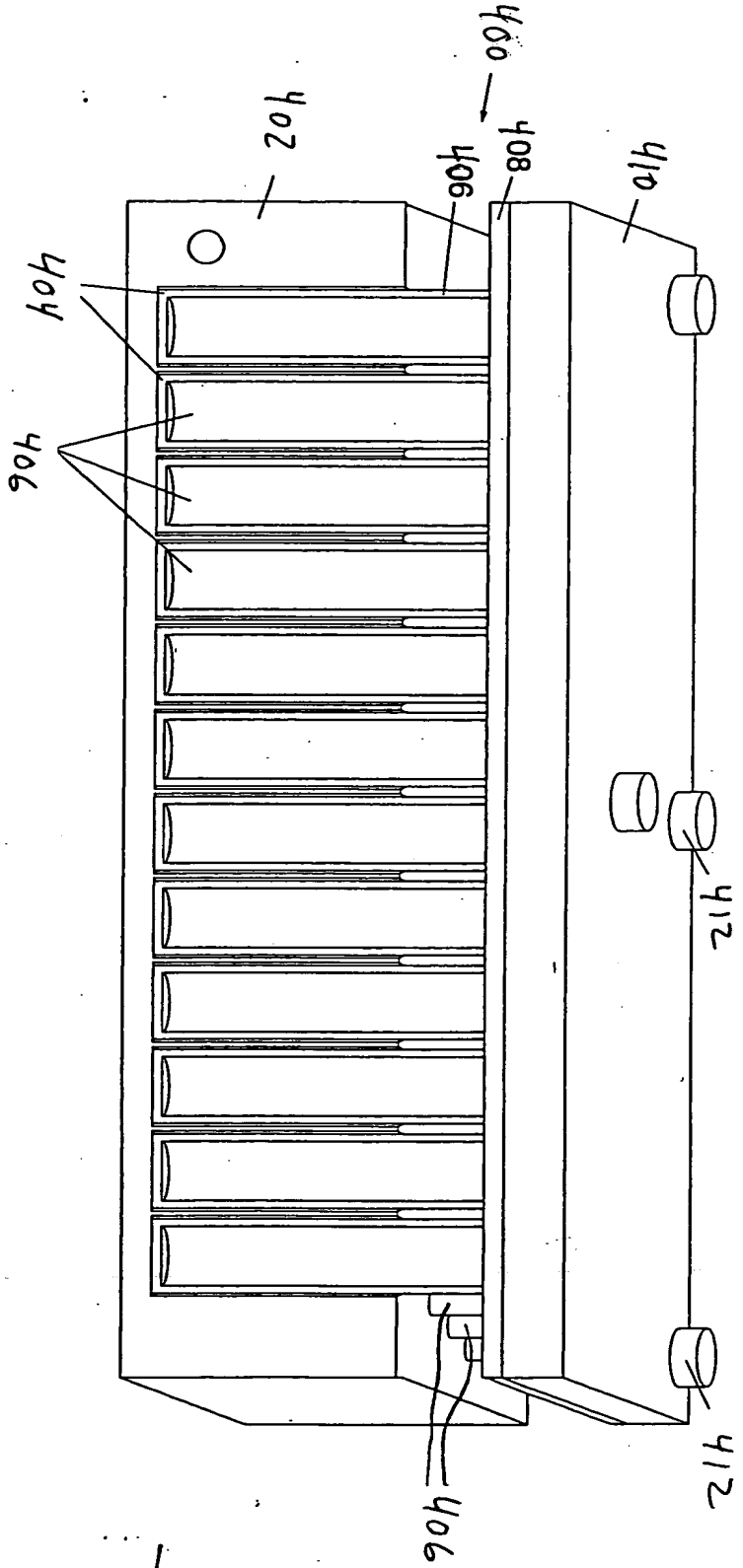


Fig. 4

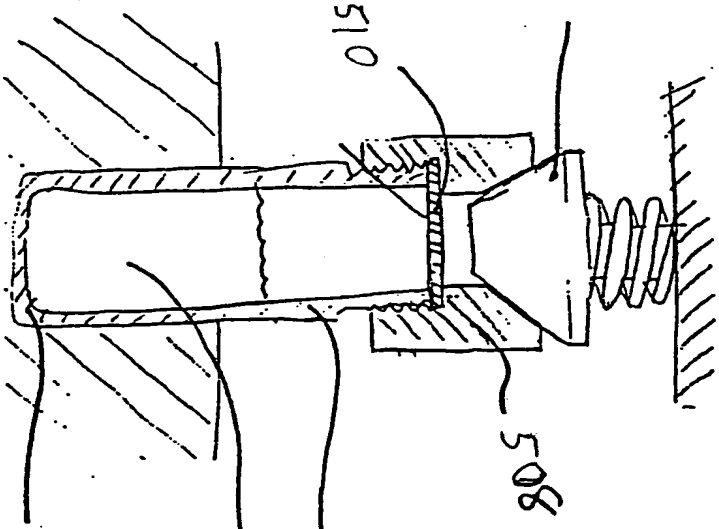


Figure 5C

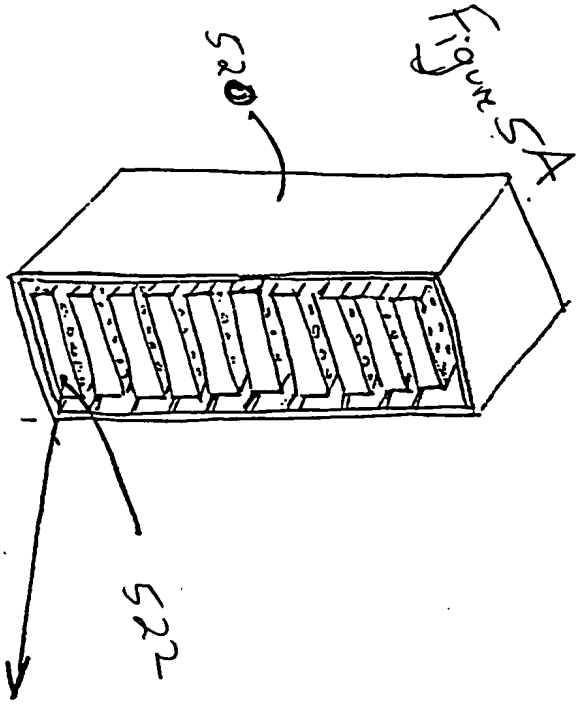


Figure 5A

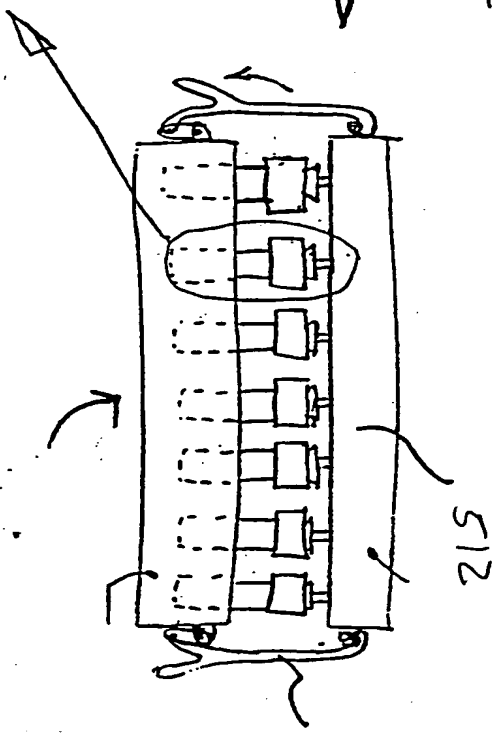


Figure 5B

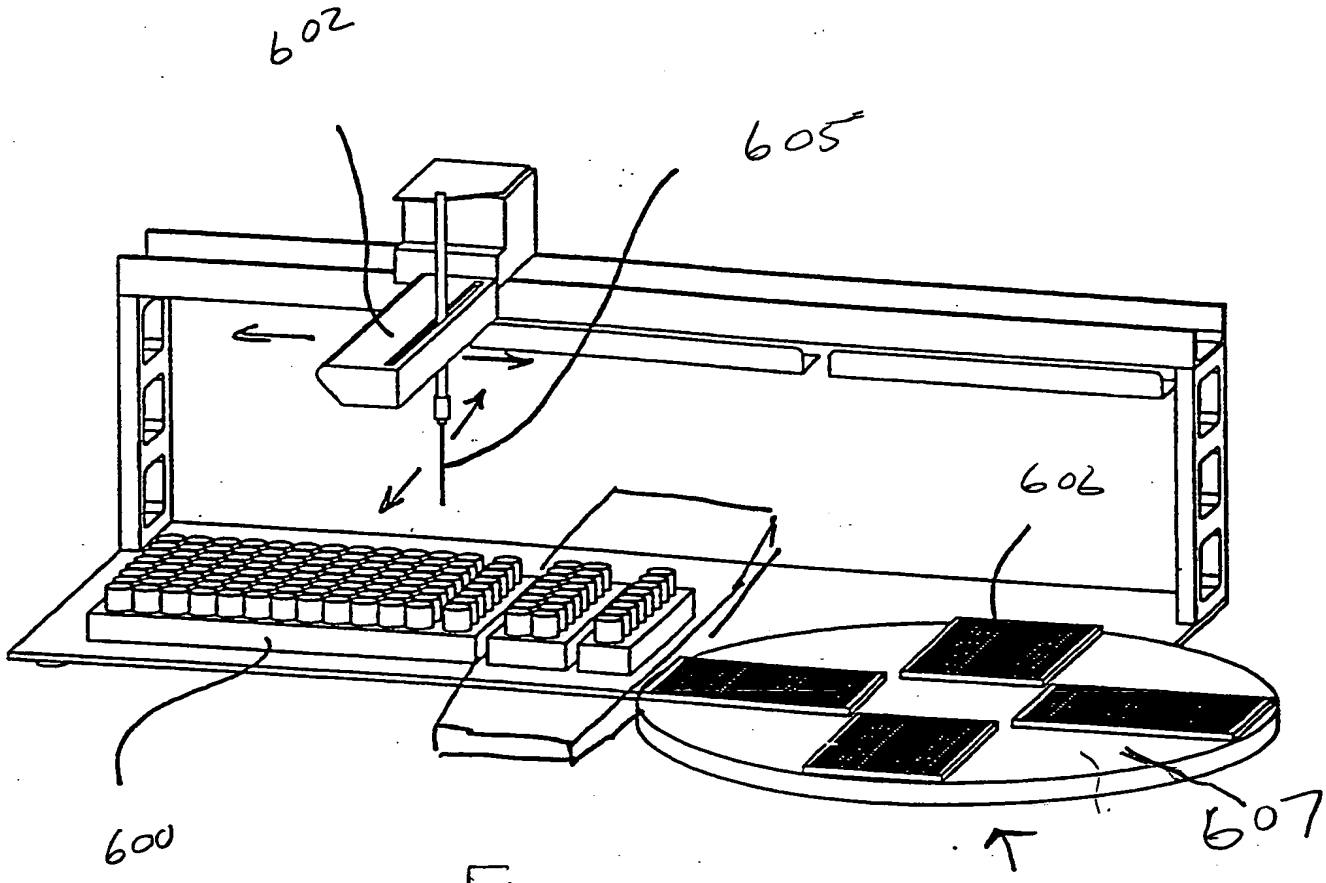


Figure 6

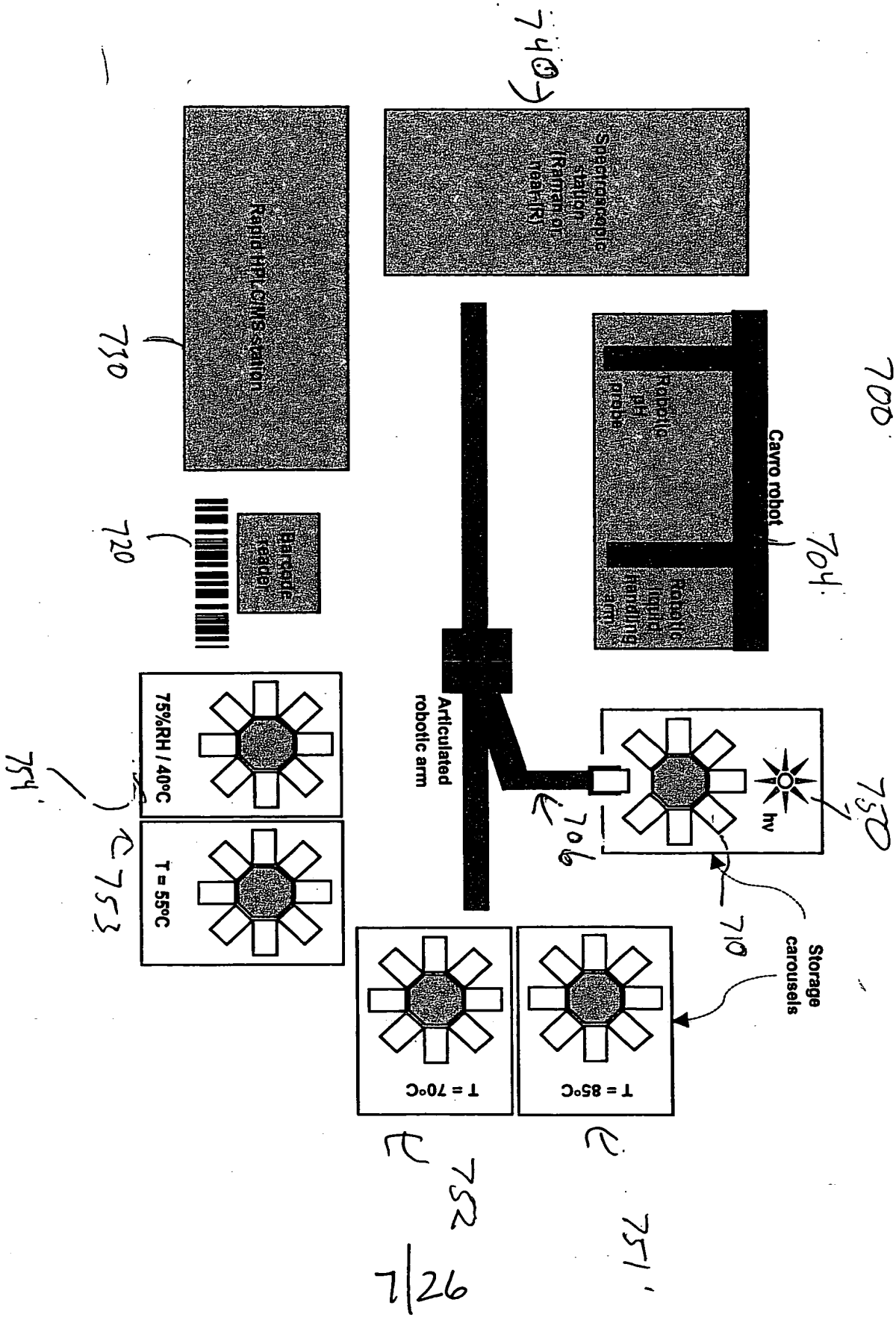
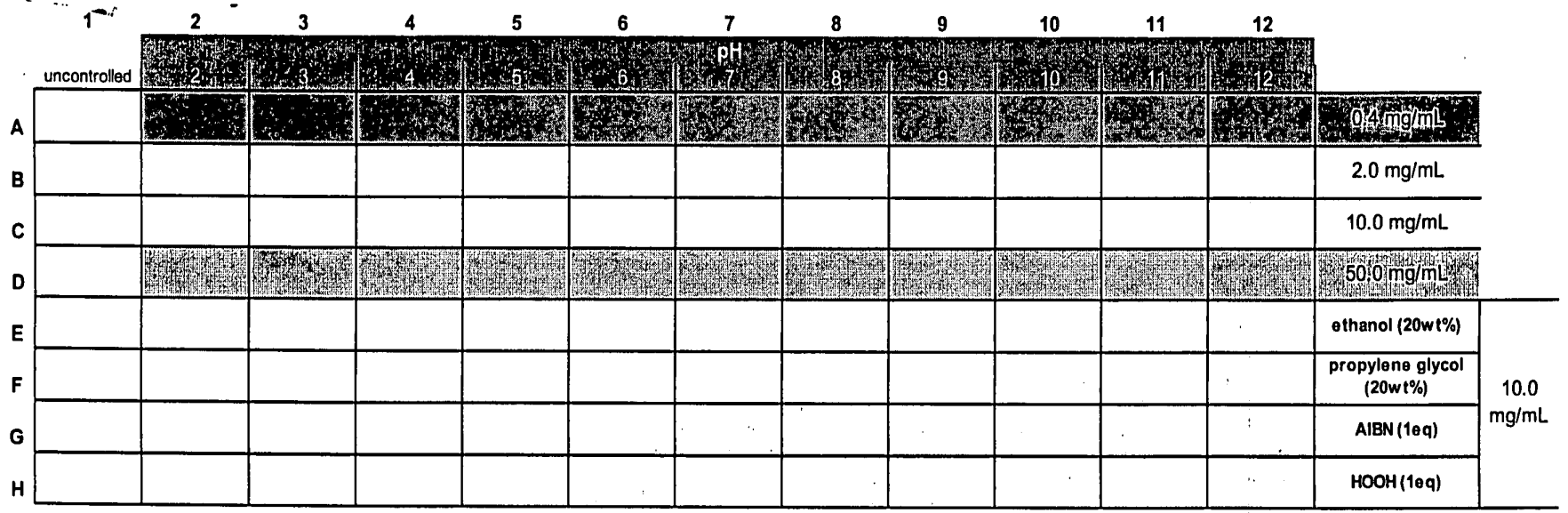

740
Spectroscopic station (Raman or near IR)
710
Rapid HPLC/MS station
720
Barcode reader
Cavro robot
704
Robotic pH probe
Robotic liquid handling arm
700
Articulated robotic arm
706
hv
732
754
75%RH / 40°C
753
T = 55°C
T = 70°C
752
T = 85°C
751
Storage carousels
7/26

Figure 7

Figure 8A

Docket No. 2003-003R1 EMLN: EV186632526US
Inventor: Carlson et al. Filed: March 1, 2004
Title: Evaluating Effects Of Exposure Conditions On Drug Samples Over Time



Aqueous solutions with a total volume of 800 uL/well

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Figure 8B

Excipient compatibility – solids formulations

Solids library 1: Diluents and Lubricants

	1	2	3	4	5	6	7	8	9	10	11	12	Lubricants (0.2 mg)
A													[nothing]
B													PEG
C													stearic acid
D						API (1.0 mg)							talc
E													sodium fumurate
F													zinc stearate
G													calcium stearate
H													magnesium stearate
Diluents (7.0 mg)	[nothing]	mannitol	sucrose	calcium sulfate	cellulose (MC)	dextrin	D-glucose	fructose	starch	sorbitol	lactitol	lactose	

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Figure 8C

Excipient compatibility – solids formulations

Docket No. 2003-003R1 EMLN: EV186632526US
Inventor: Carlson et al. Filed: March 1, 2004
Title: Evaluating Effects Of Exposure Conditions On Drug Samples Over Time

Solids library 2:
Fixed diluent and lubricant with binders, glidants, colorants, acidifiers, alkylizers

	1	2	3	4	5	6	7	8	9	10	11	12	Glidant		Colorant
A	1.0 mg dc			5.0 mg Binder			1.0 mg colorant						[nothing]	[nothing]	
B	7.0 mg fixed diluent			1eq pH adjuster			1.0 mg dessicant						silicon dioxide		
C	0.2 mg fixed lubricant						1.0 mg glidant						calcium silicate		
D													talc		
E													[nothing]	iron oxide	
F													silicon dioxide		
G													calcium silicate		
H													talc		
pH	[nothing]	citric acid	magnesium oxide	[nothing]	citric acid	magnesium oxide	[nothing]	citric acid	magnesium oxide	[nothing]	citric acid	magnesium oxide			
Binder	[nothing]			carboxymethylcellulose, sodium			hydroxypropyl methylcellulose			povidone					

dc = drug candidate

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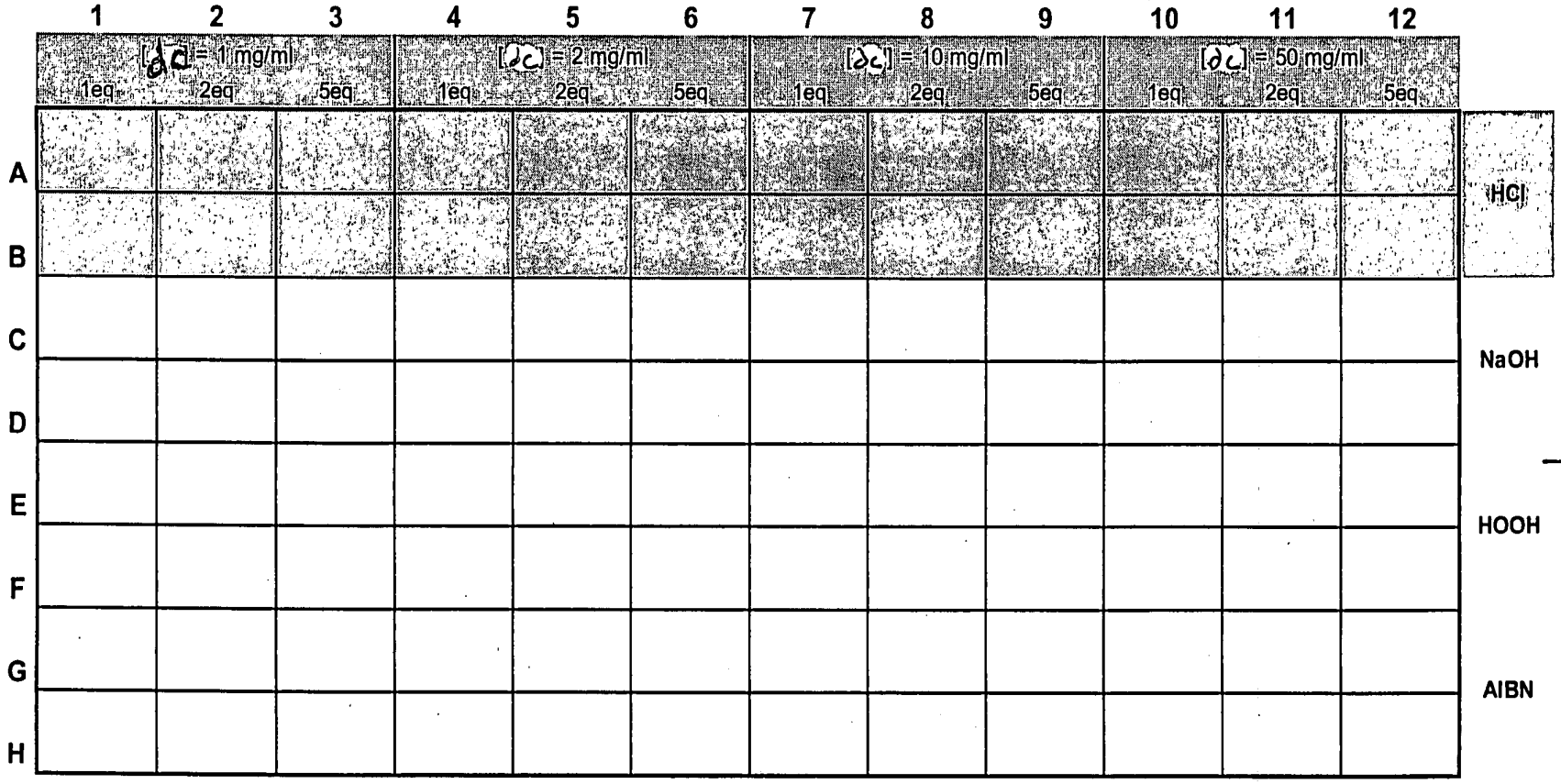
Docket No. 2003-003R1 EMLN: EV186632526US
Inventor: Carlson et al. Filed: March 1, 2004
Title: Evaluating Effects Of Exposure Conditions On Drug Samples Over Time

Figure 6D



Total volume = 800uL/well

dC = drug candidate

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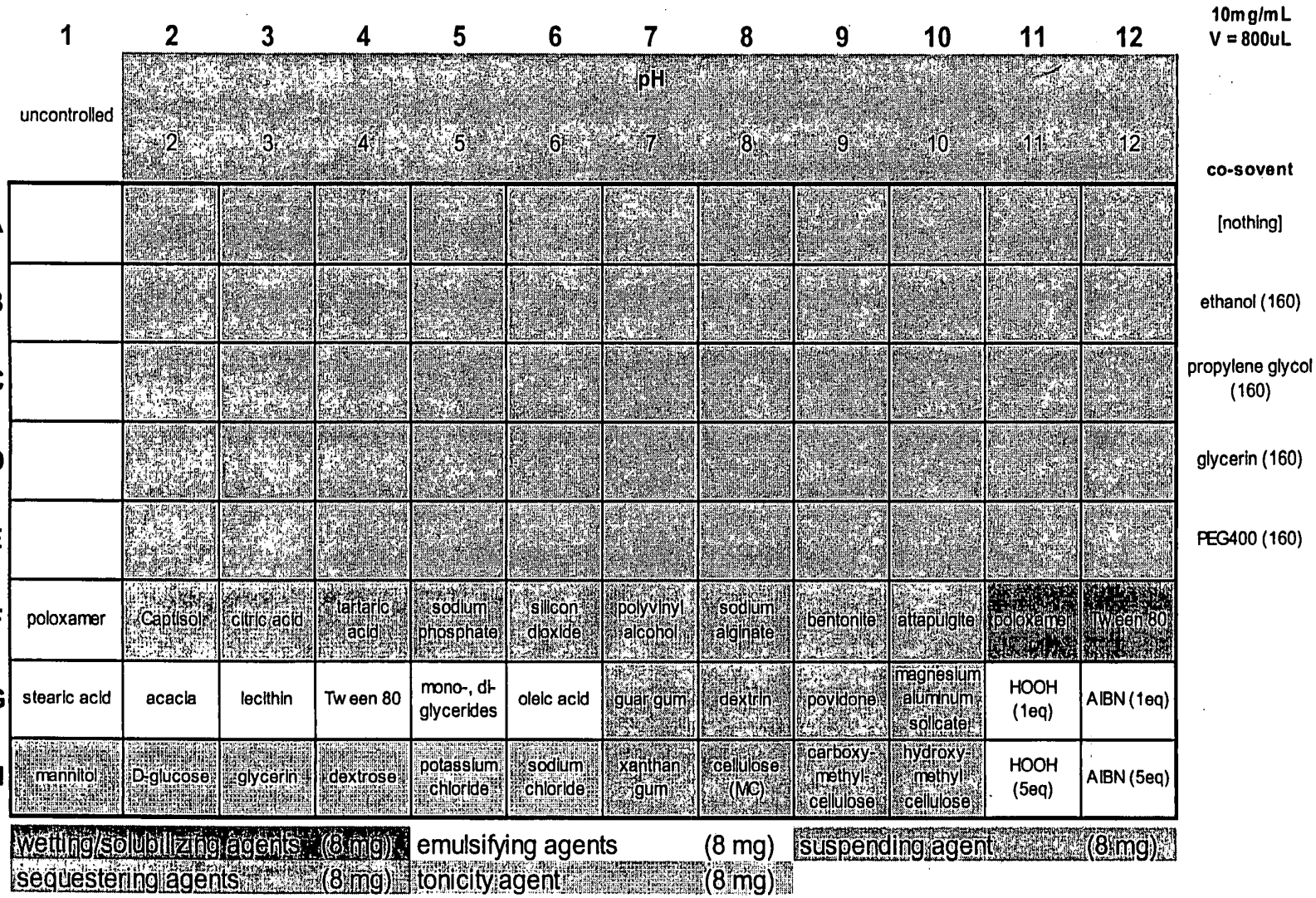
Figure 8E

Liquids Samples

Chemical stability and excipient compatibility



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Docket No. 2003-003R1 EMLN: EV186632526US
Inventor: Carlson et al. Filed: March 1, 2004
Title: Evaluating Effects Of Exposure Conditions On Drug Samples Over Time

Stability of Amoxicillin by Fluorescence at 632.8 nm excitation

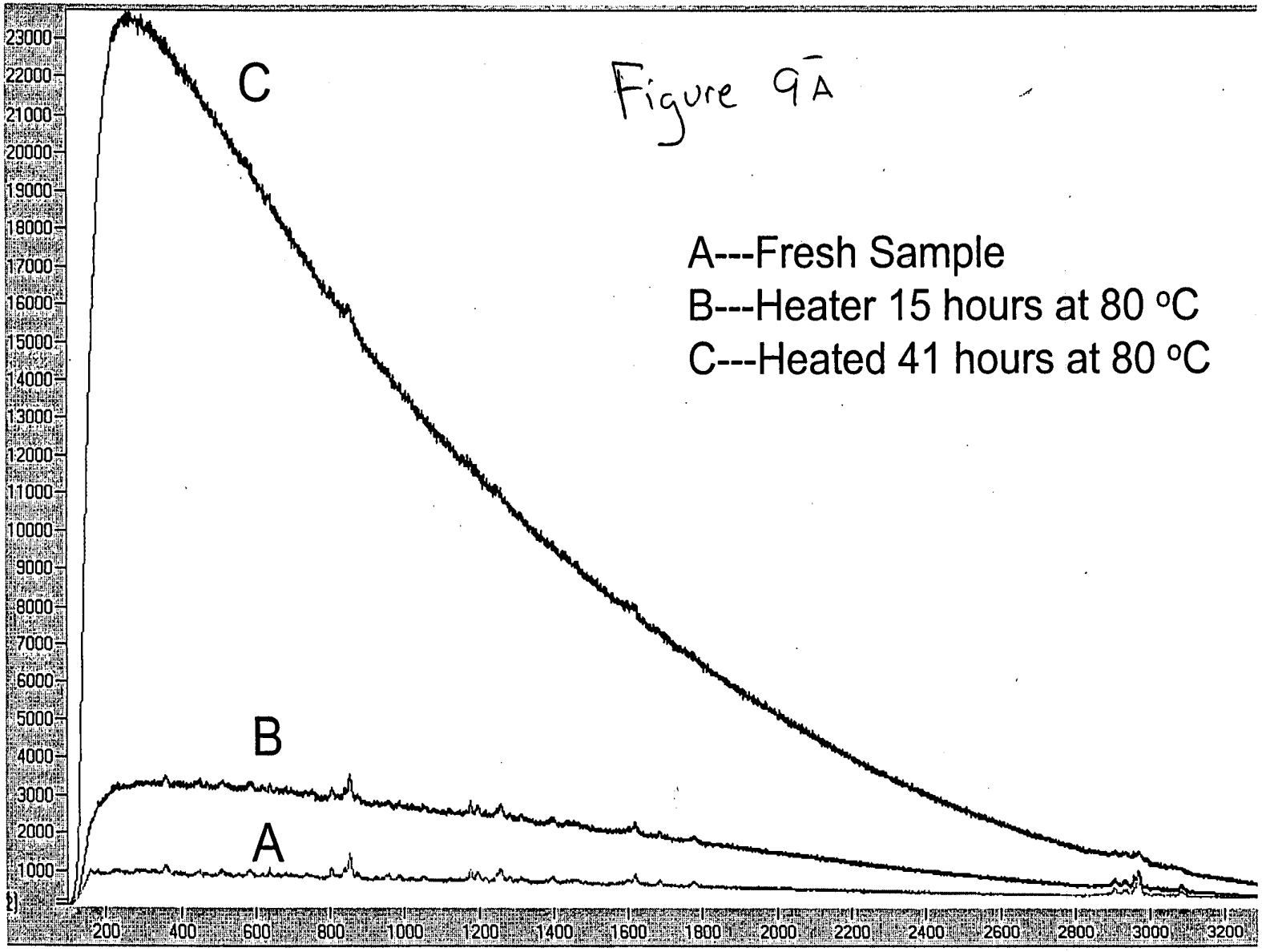

Figure 9A

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Docket No. 2003-003R1 EMLN: EV186632526US
Inventor: Carlson et al. Filed: March 1, 2004
Title: Evaluating Effects Of Exposure Conditions On Drug Samples Over Time

Figure 9B

Fluorescence of Ampicillin tri-hydrate at 632.8 nm excitation

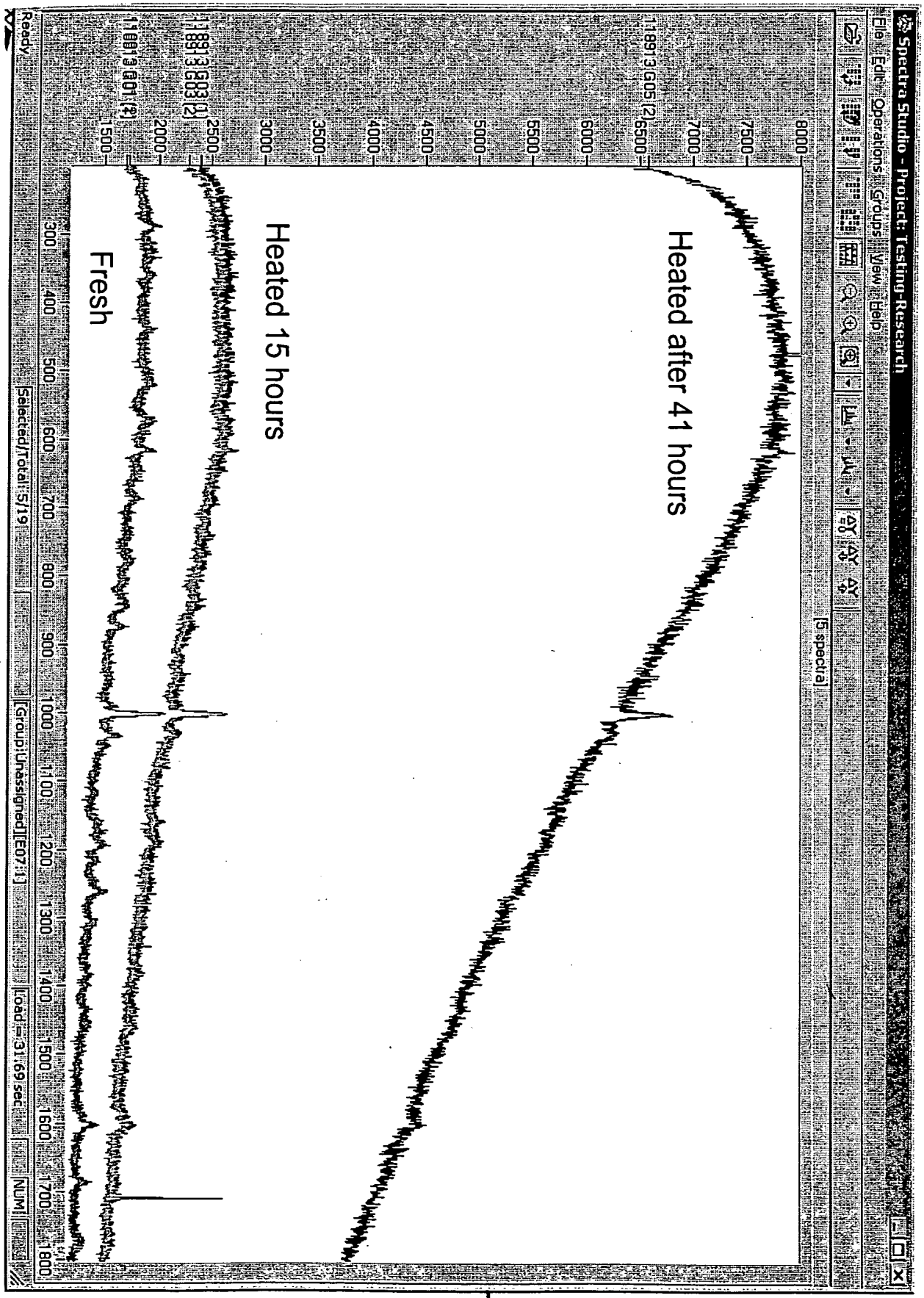
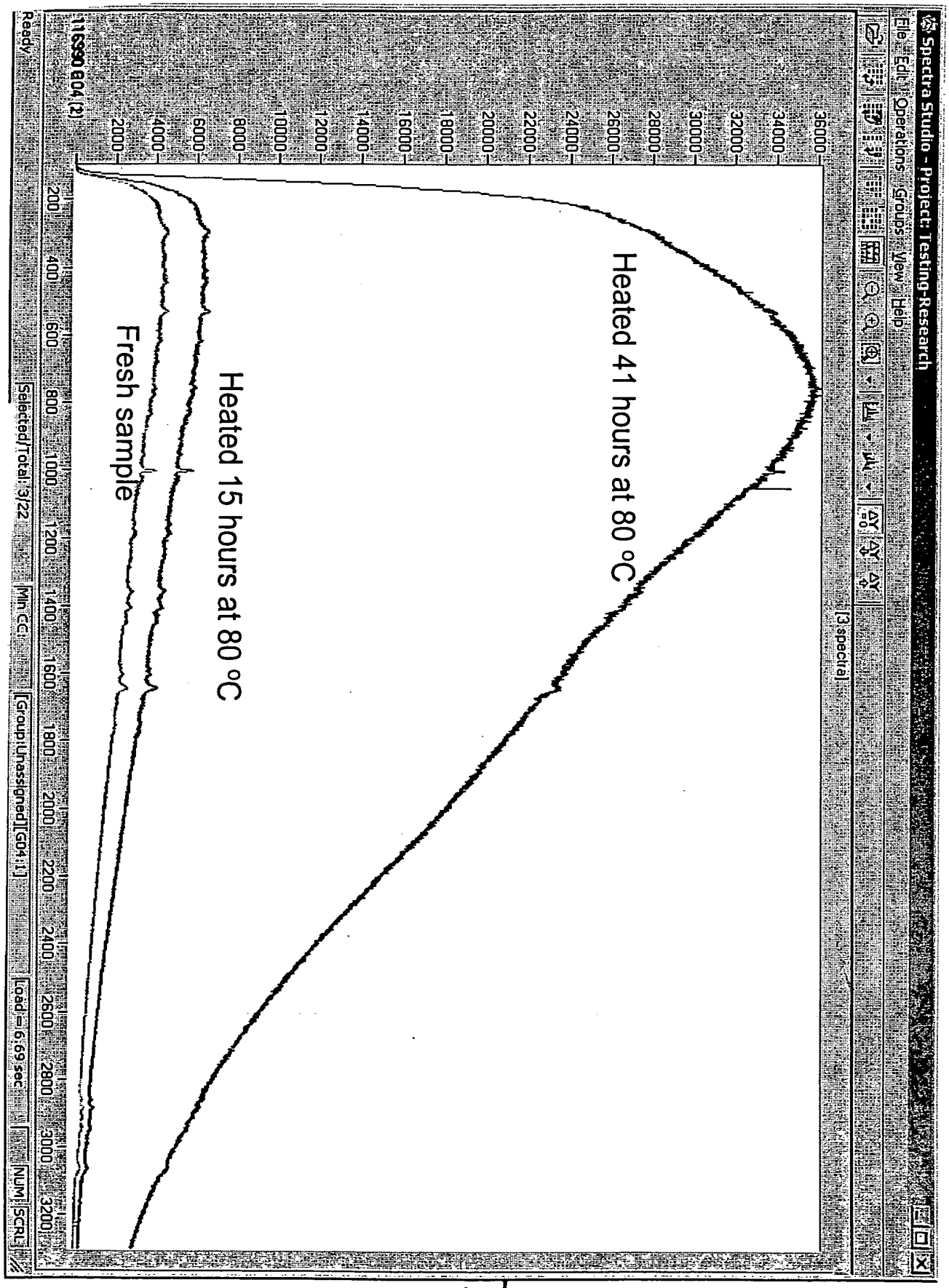


Figure 9C

Fluorescence of Cephalexin by 632.8 nm excitation



Fluorescence Excitation Spectra of Amoxicillin & its decomposition Products by detecting at 680 nm

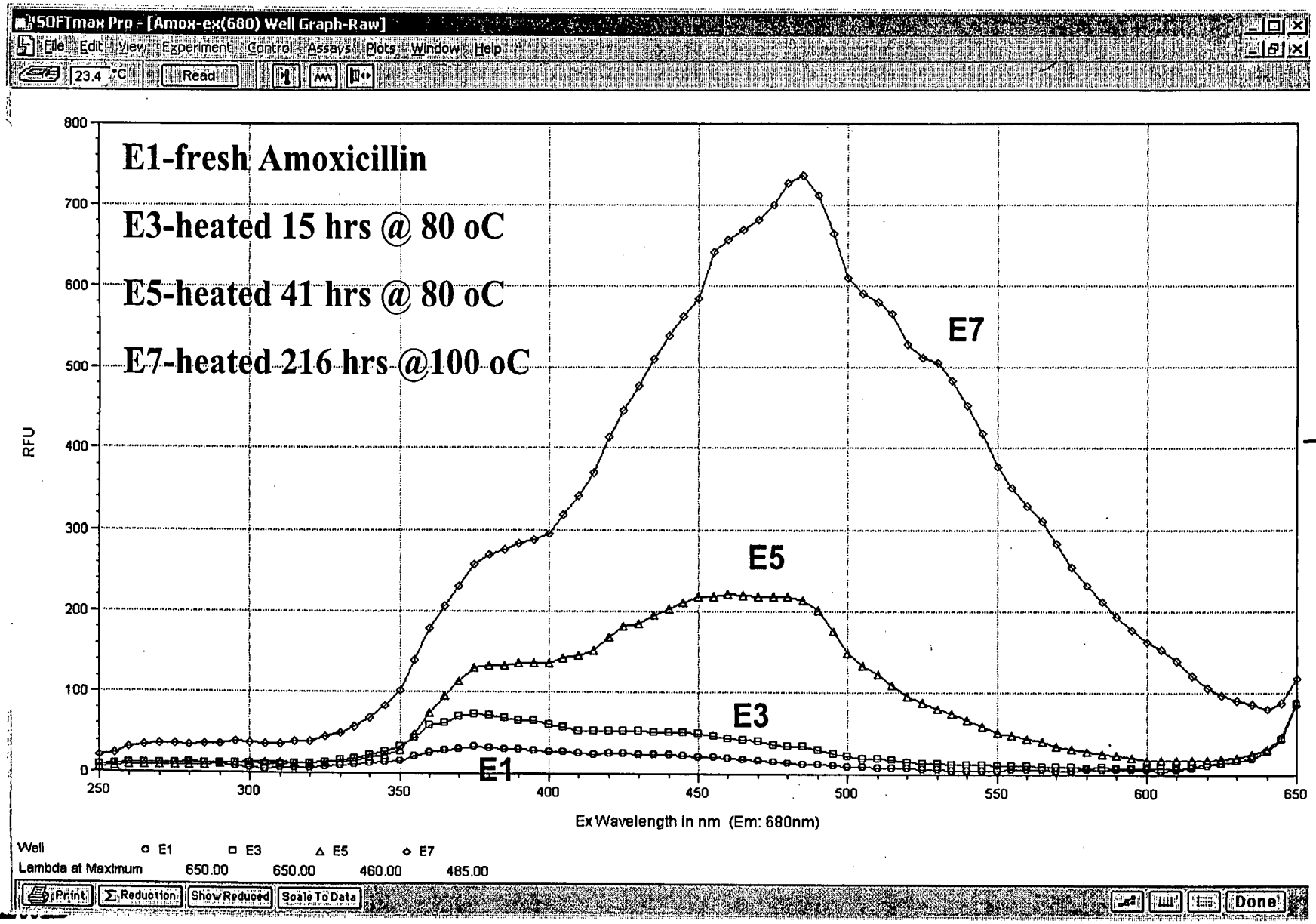


Figure 9D

Raman at 785 nm excitation: Ampicillin Trihydrate

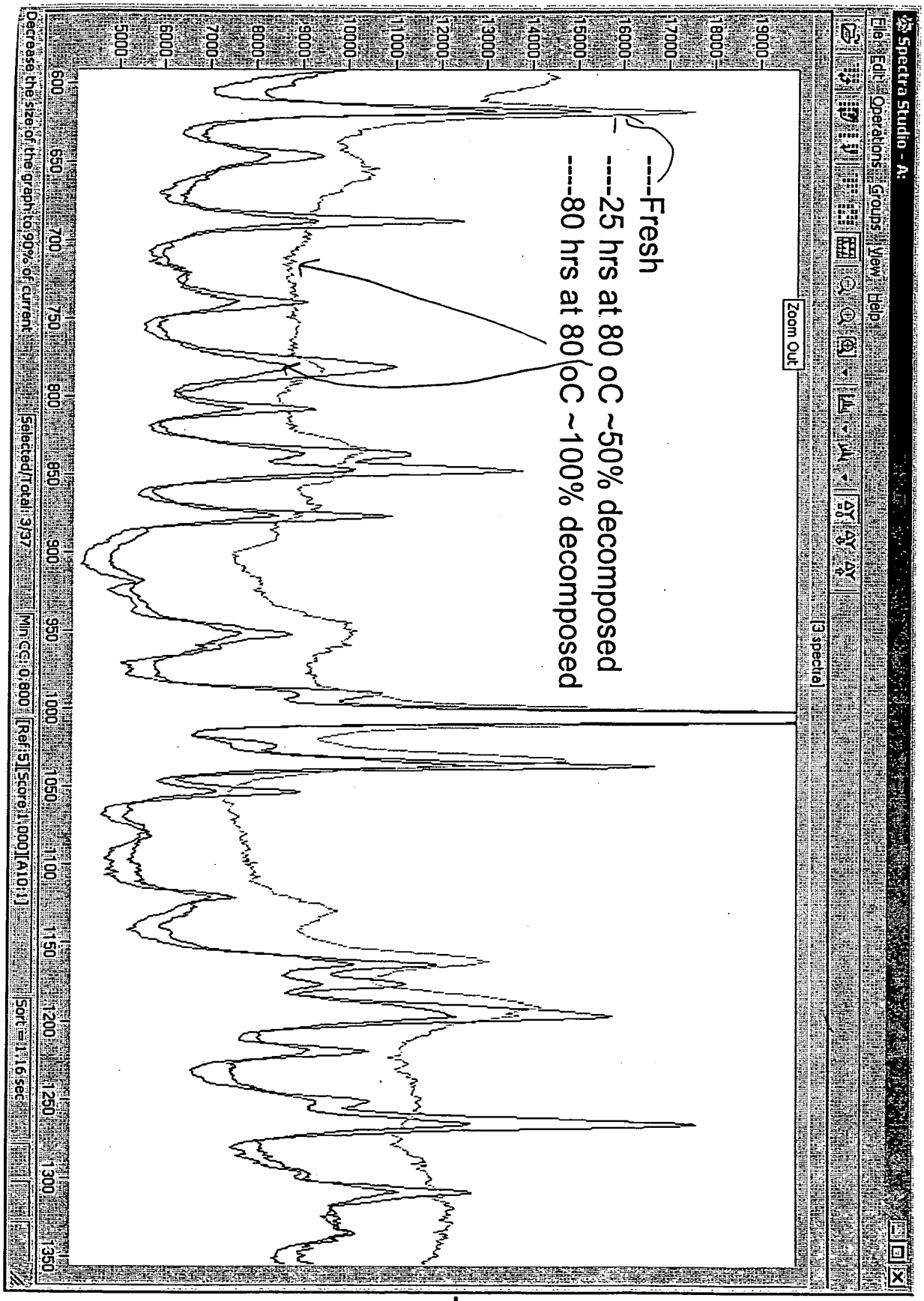
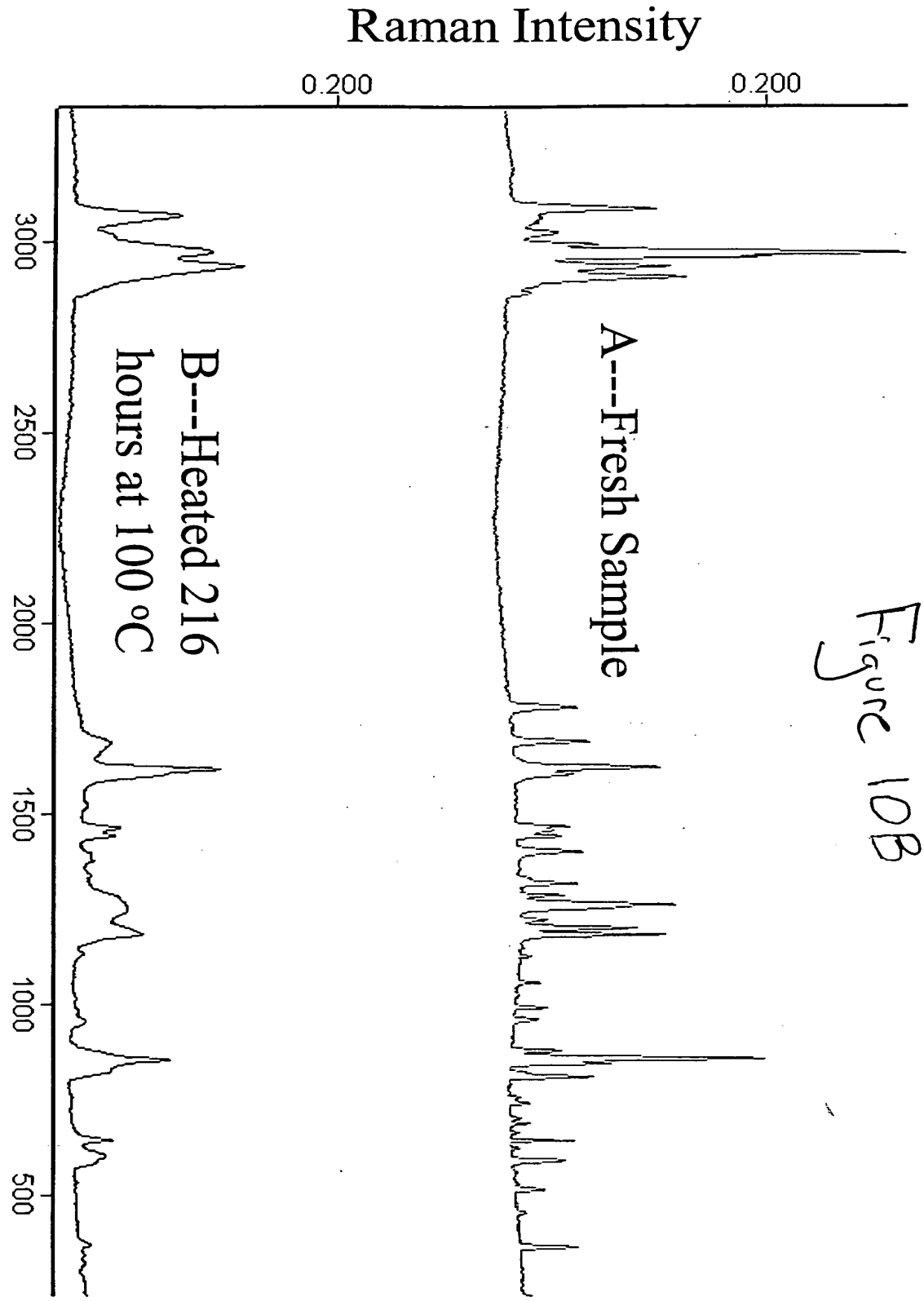


Figure 10A

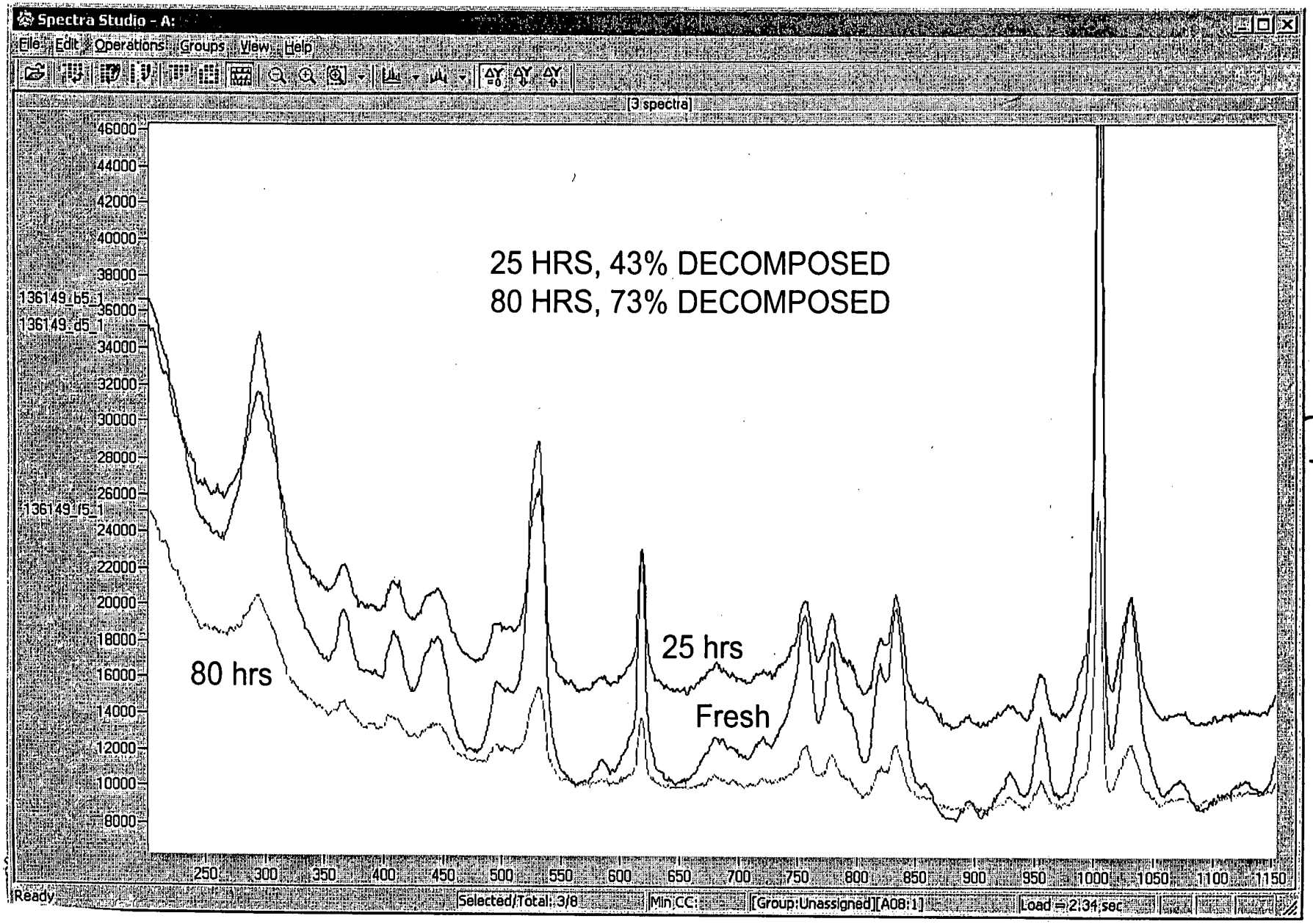


Stability of Amoxicillin by FT-Raman at 1064 nm excitation

Figure 10B

Figure 10C

Raman at 785 nm excitation: Cephalexin hydrate



Docket No. 2003-003R1 EMLN: EV186632526US
Inventor: Carlson et al. Filed: March 1, 2004
Title: Evaluating Effects Of Exposure Conditions On Drug Samples Over Time

Stability of Amoxicillin after heating by XRD

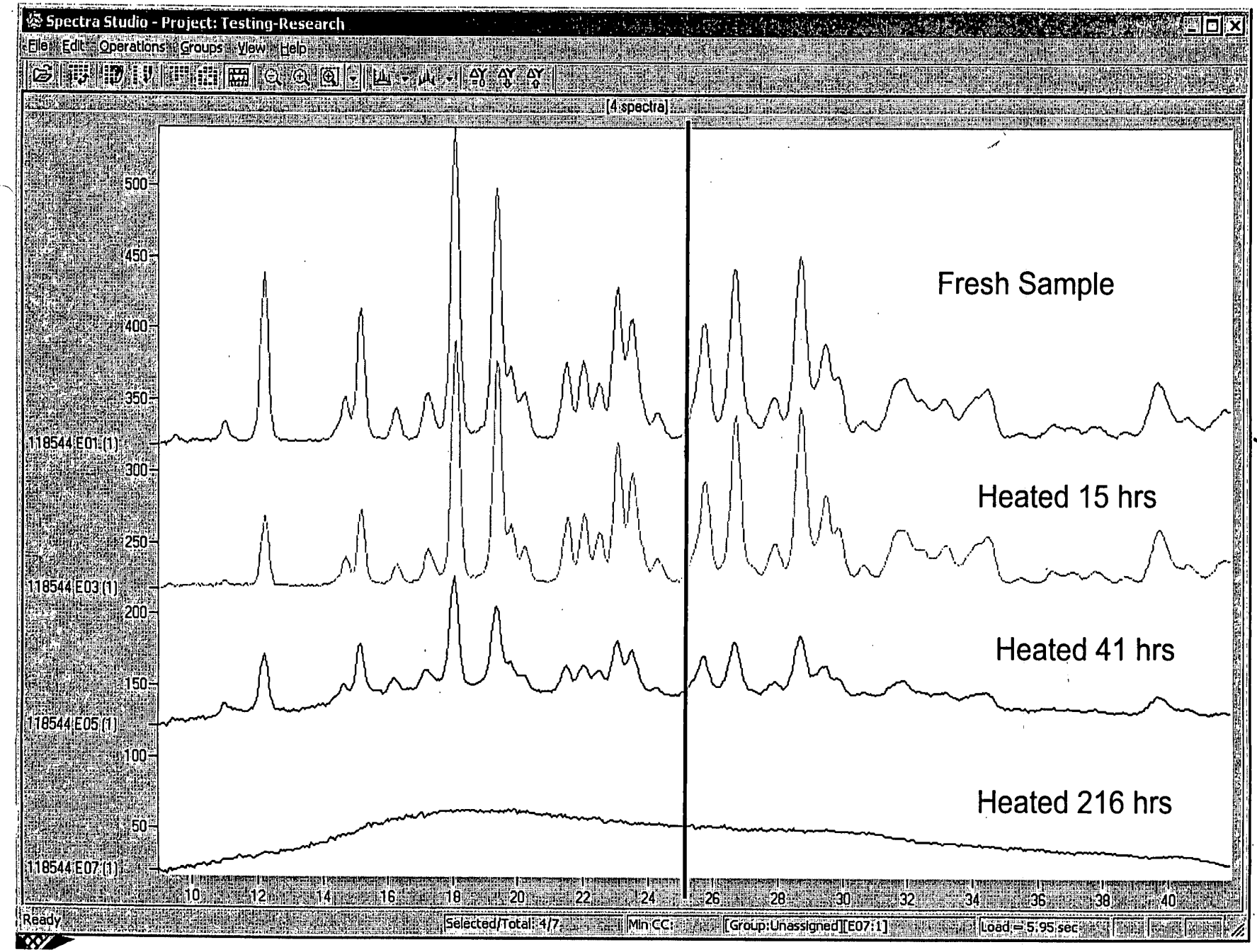


Figure 11.

FTNIR of amoxcillin powder

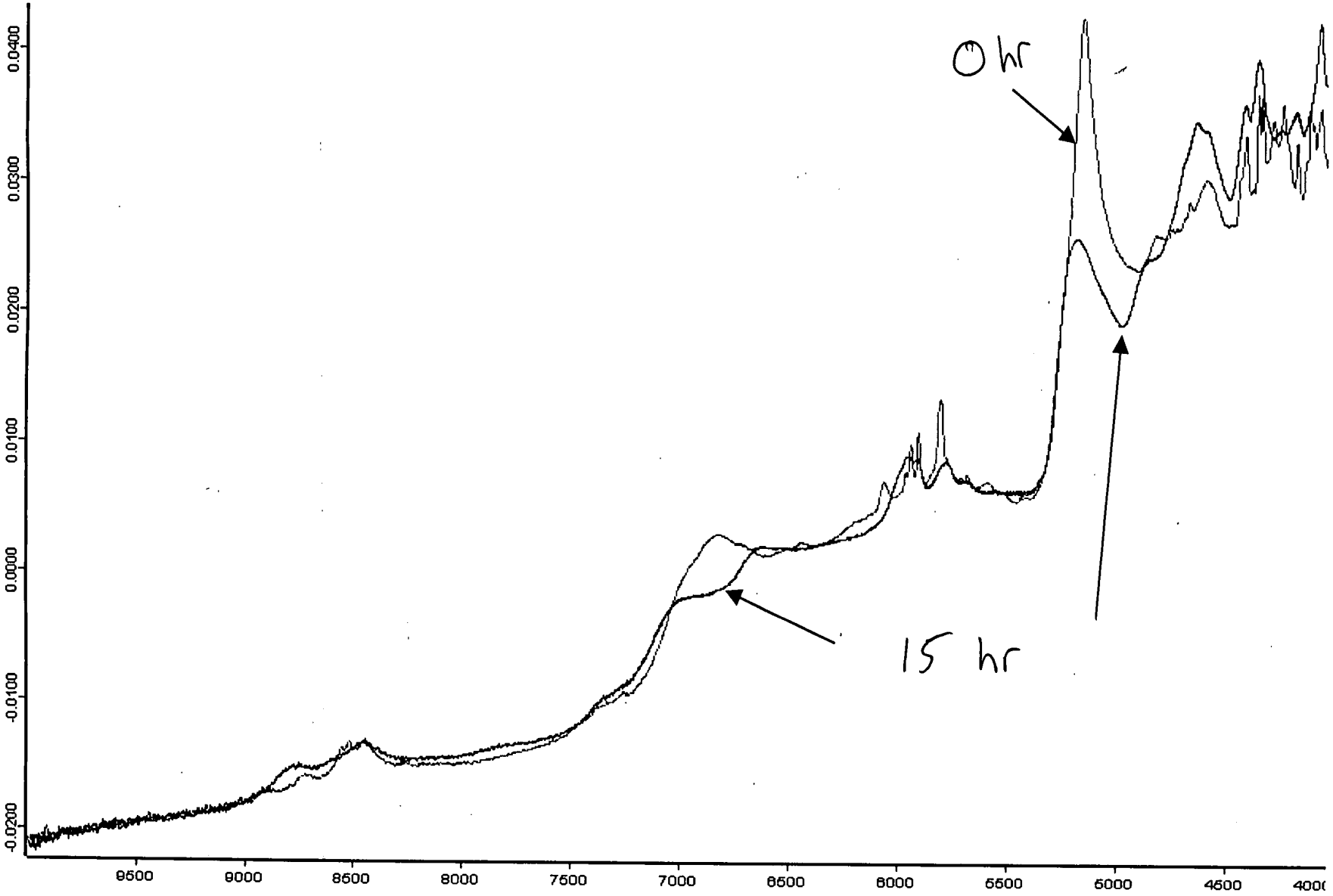


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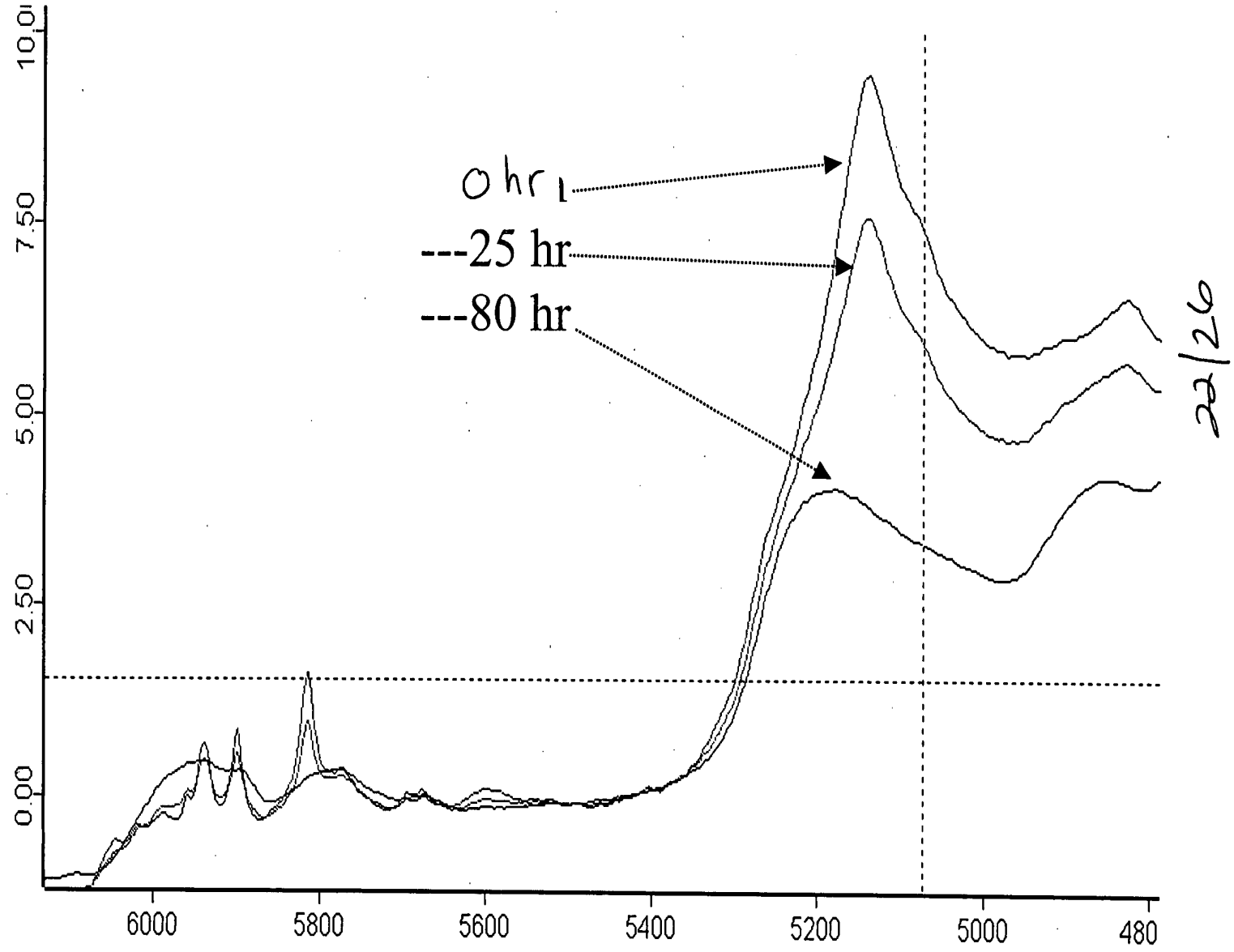
Figure 12 A

Docket No. 2003-003R1 EMLN: EV186632526US
Inventor: Carlson et al. Filed: March 1, 2004
Title: Evaluating Effects Of Exposure Conditions On Drug Samples Over Time

Figure 12B

FTNIR of Cephalexin powder in 8-mL vials after 0. 25, 80 hrs @ 80 oC.

Docket No. 2003-003R1 EMLN: EV186632526US
Inventor: Carlson et al. Filed: March 1, 2004
Title: Evaluating Effects Of Exposure Conditions On Drug Samples Over Time



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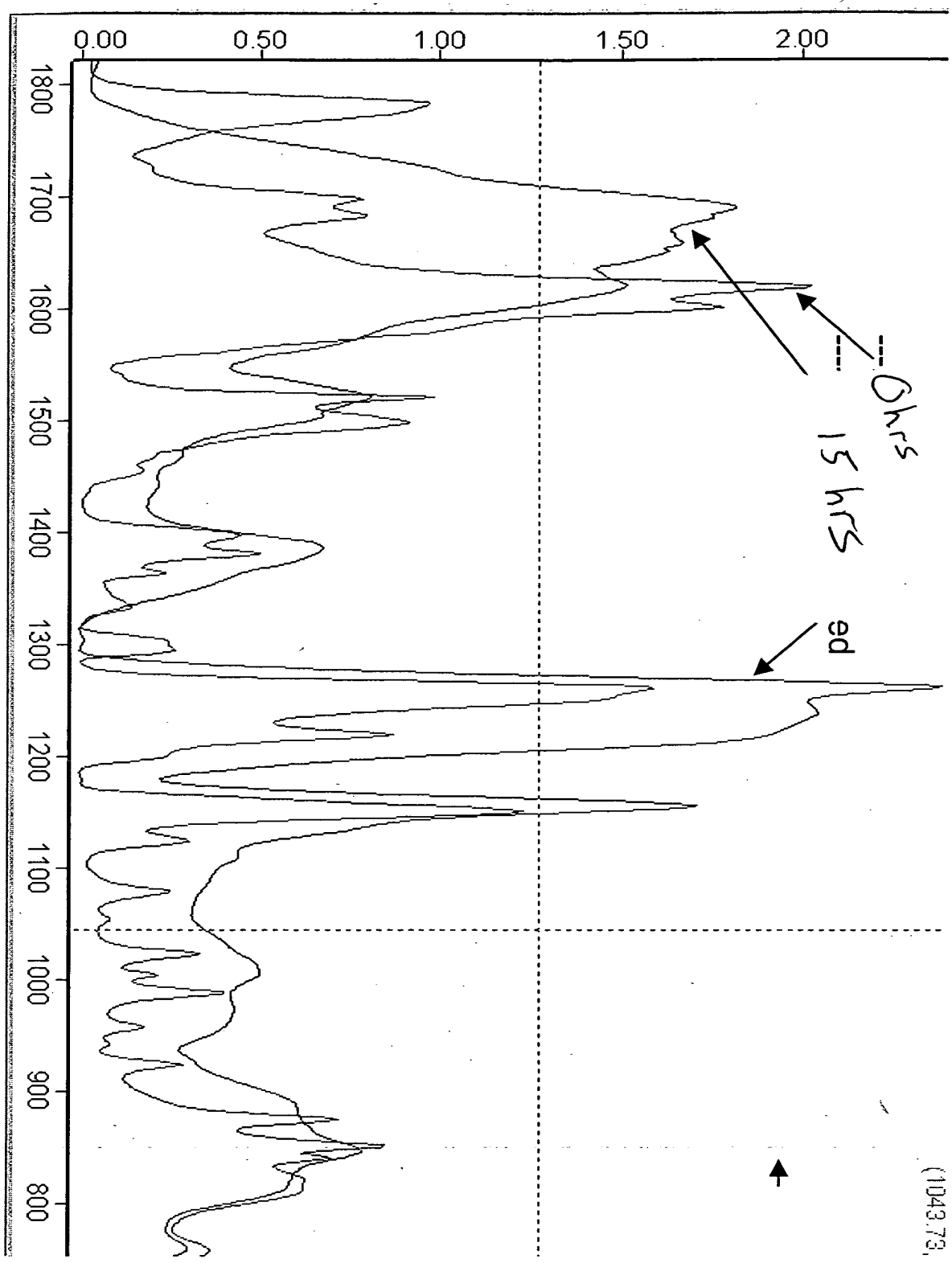
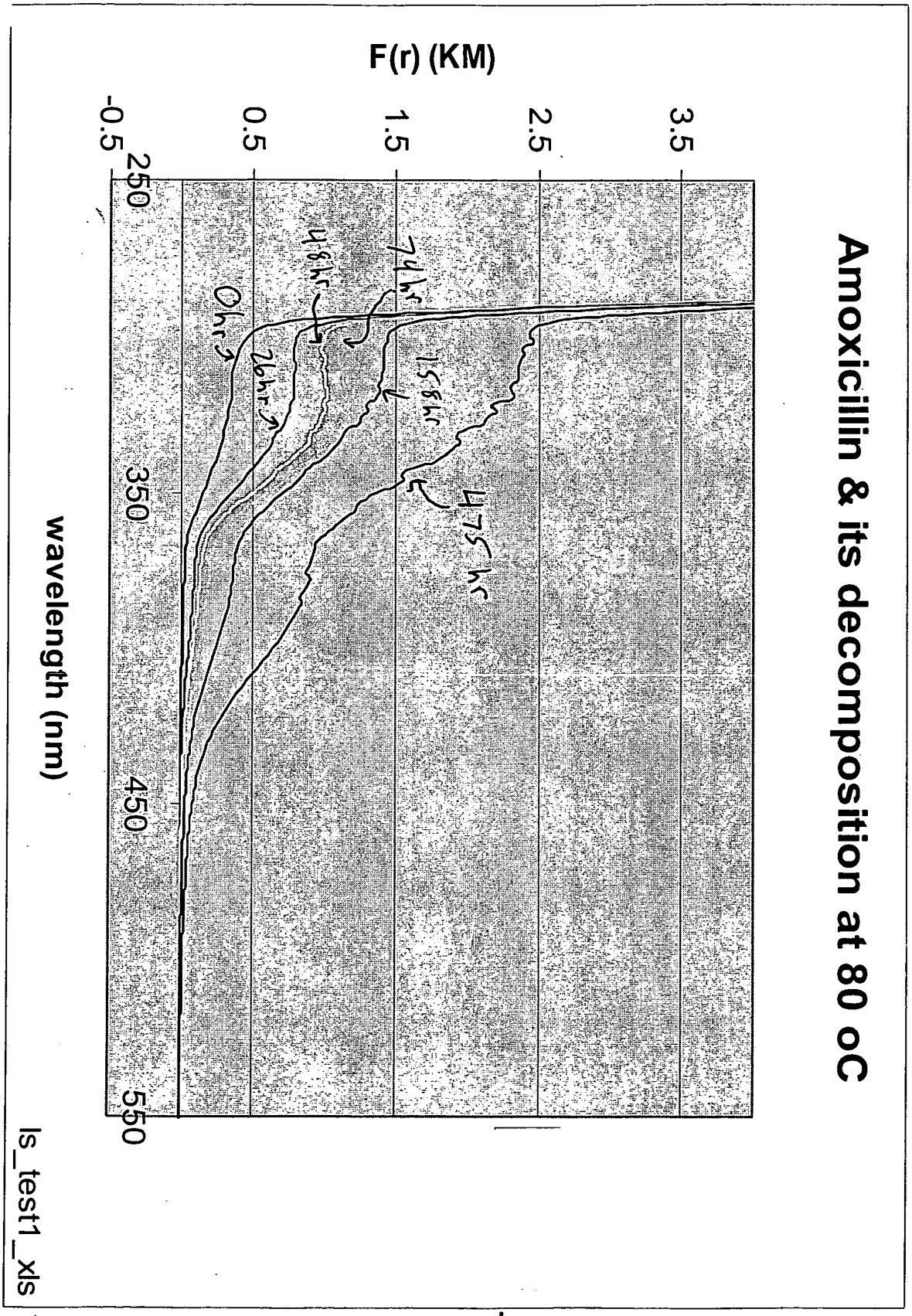

FTIR Diffuse Reflectance of amoxicillin and its 99.5% decomposed powder after KM transform
0.00
0.50
1.00
1.50
2.00
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
0 hrs
15 hrs
ed
(1043.73,

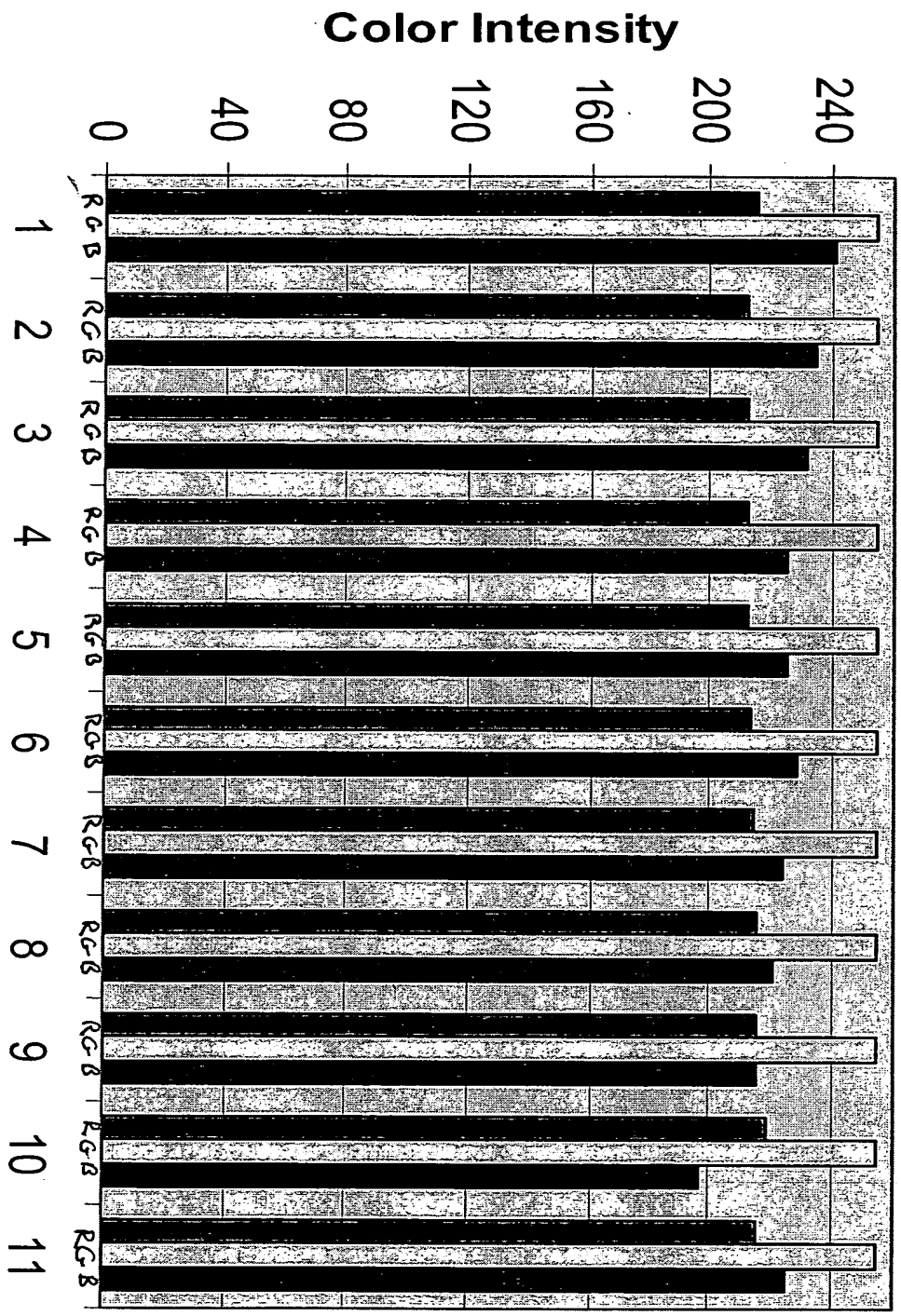
Figure 13

Figure 14

UV-Vis diffuse reflectance measurement

Amoxicillin & its decomposition at 80 oC





Colors of Amoxicillin Batch-1 Samples

Figure 15A

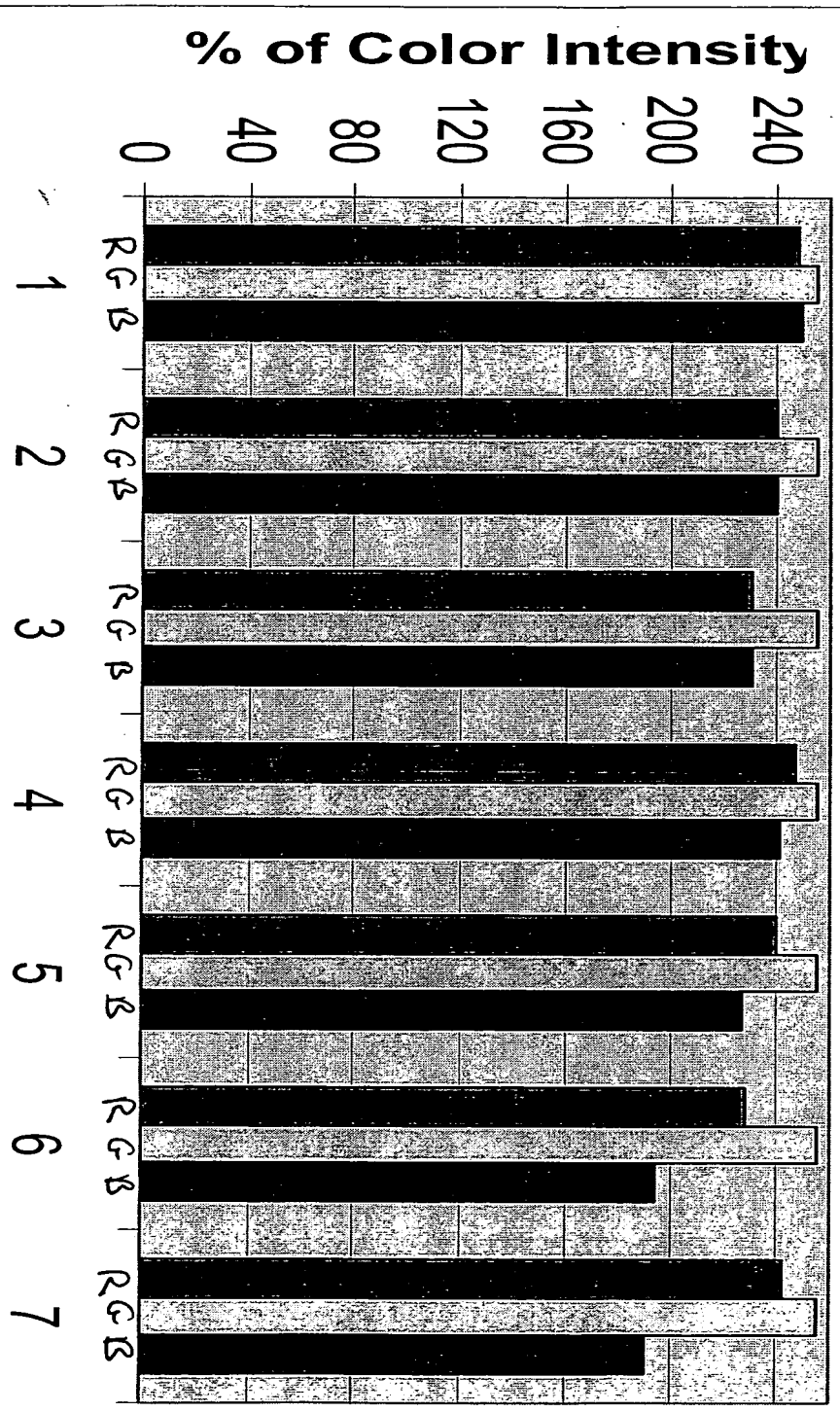

% of Color Intensity
0
40
80
120
160
200
240
R G B
1
2
3
4
5
6
7
Sample number
Color of Amoxicillin Batch-2 samples

Figure 15B